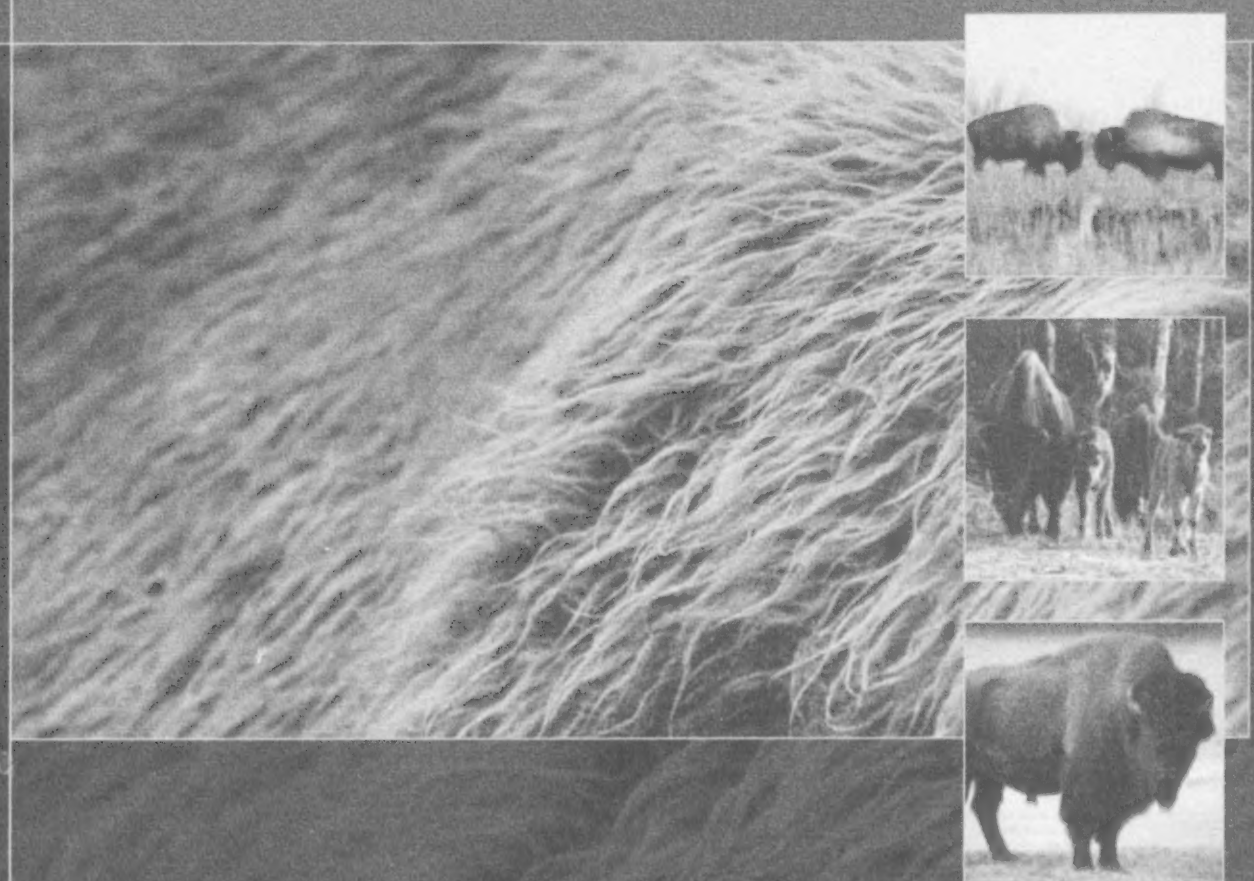
WOOD BISON MANAGEMENT STRATEGY
for the Northwest Territories



2010-2020

NWT Species at Risk

Northwest Territories Environment and Natural Resources

Minister's Message

The *Wood Bison Management Strategy for the Northwest Territories* (Strategy) provides long-term vision, goals and principles for the management of wood bison in the Northwest Territories (NWT) during the next ten years.

It will guide the development of population-specific management plans for the Slave River Lowlands, Nahanni and Mackenzie wood bison populations and the recovery of wood bison in the NWT. The management plans, developed in partnership with the Tłı̨chǫ Government, Wildlife Management Boards and community stakeholders, will contain technical objectives and actions to achieve the goals of the Strategy.

Addressing the Key Strategies identified in this document, along with developing and implementing population management plans, will contribute to the national recovery effort under the federal *Species at Risk Act*.

The Government of the Northwest Territories appreciates the contributions of the many groups and organizations which helped improve and develop this Strategy.

J. Michael Miltenberger
Minister
Environment and Natural Resources

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1 Goals

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The goals for wood bison management recognize that bison, like other wildlife, have ecological, cultural and spiritual values along with consumptive uses.
The goals are to:

1. Recover free-ranging, genetically diverse, healthy[1] wood bison throughout their historic range in the Northwest Territories (NWT), which can sustain on-going harvests for the benefit of all NWT residents.
2. Contribute to the recovery of free-ranging, healthy wood bison throughout their historic range in Canada.

The implications of achieving these goals are:

1. Recovery of bison within the NWT will result in expansion of healthy wood bison populations into new areas where there is suitable habitat.
2. Benefits to NWT residents will be greatest when bison populations increase to a point where they can sustain annual harvests with a limited regulation, similar to regulation now applied to moose.
3. Active surveillance for bovine tuberculosis and brucellosis in bison populations, and containment of these diseases, must continue as long as there are infected populations and a desire to protect non-infected animals from infection.
4. The NWT will work, in cooperation with Canada, First Nations, other agencies and communities, toward removing bovine tuberculosis and bovine brucellosis from bison in and around Wood Buffalo National Park (WBNP).
5. The Bison Control Area program must continue until bison in and around WBNP are no longer infected with tuberculosis or brucellosis.
6. Actions will be needed to prevent further loss of genetic diversity within and among bison populations, and to enhance genetic diversity in wood bison in the NWT and elsewhere. Continued survival of populations will be more likely with broader genetic diversity within and among populations.

The goals and actions identified in this Strategy support the vision, goals and Strategic Initiatives of the Legislative Assembly. Specifically, the Strategy supports the following two goals of the 16th Legislative Assembly:

- *"an environment that will sustain present and future generations"* with the priority to *"coordinate our efforts to ensure development is sustainable for our land and wildlife,"* and
- *"a diversified economy that provides all communities and regions with opportunities and choices"* with the priority to *"support the development of sustainable local economies through small businesses and community-based sectors such as tourism, agriculture, arts and crafts, and the traditional economy."*

The Strategy also includes activities identified under the Government of the Northwest Territories (GNWT) *Business Plan* and the Department of Environment and Natural Resources *Framework for Action*.

[1] Healthy means that bison are free of bovine tuberculosis, brucellosis and other significant diseases from domestic animals.

2 Principles

The Department of Environment and Natural Resources (ENR) will facilitate development of a management plan for each NWT bison population consistent with this Strategy.
The Government of the NWT (GNWT) recognizes:

- Recovery and restoration of wood bison in the NWT cannot be achieved without the cooperation and support of Aboriginal organizations, the Tłı̨chǫ Government and NWT communities.
- Communities will take the lead in identifying specific management objectives for bison on their traditional lands.

This Strategy also adopts the following principles:

- Manage at the landscape level.
- Use all sources of knowledge.
- Employ the Precautionary Principle.
- Use adaptive management approaches.
- Take long-term recovery approaches.
- All responsible jurisdictions will contribute.

Photo Credit: GNWT

3 Background

Wood bison *(Bison bison athabascae)* are the largest land mammals in North America. Adult males weigh more than 800 kg and females more than 500 kg. They graze mainly on grasses and sedges found in meadows, wetlands and recently disturbed areas. They move with the seasons to graze where they can best obtain feed and protein.

Historically, wood bison ranged over most of the boreal region of North America west of the Precambrian Shield. The southern edge of their distribution bordered the northern edge of plains bison range. Their range covered most of the western NWT, nearly all of northern Alberta, north-eastern British Columbia, a small part of north-western Saskatchewan and most of Yukon and Alaska (Figure 1).

Wood bison disappeared from much of this range by the end of the 19th century and remained only in the region between Great Slave Lake and the Peace/Athabasca Delta. The decline of wood bison paralleled the demise of plains bison in the south between 1840 and 1900. There may have been more than 150,000 wood bison across their range in 1800, but it is estimated that only 250 remained by 1891. There are currently about 3,000 wood bison in the NWT.

Bison are important to people for many reasons. Both plains and wood bison were a critical resource to Aboriginal peoples. People today still harvest bison where they can. Many North American Aboriginal peoples have a strong cultural and spiritual connection to bison. However, some communities no longer see bison as part of their heritage, particularly if the species has been missing from the local landscape for a number of generations.

Recovering bison populations will provide opportunities for cultural and spiritual reconnection, for viewing and harvests, and aesthetic and economic benefits. It will also re-establish the ecological role bison play on the landscape.

Photo Credit: Danny Allaire

3 Background

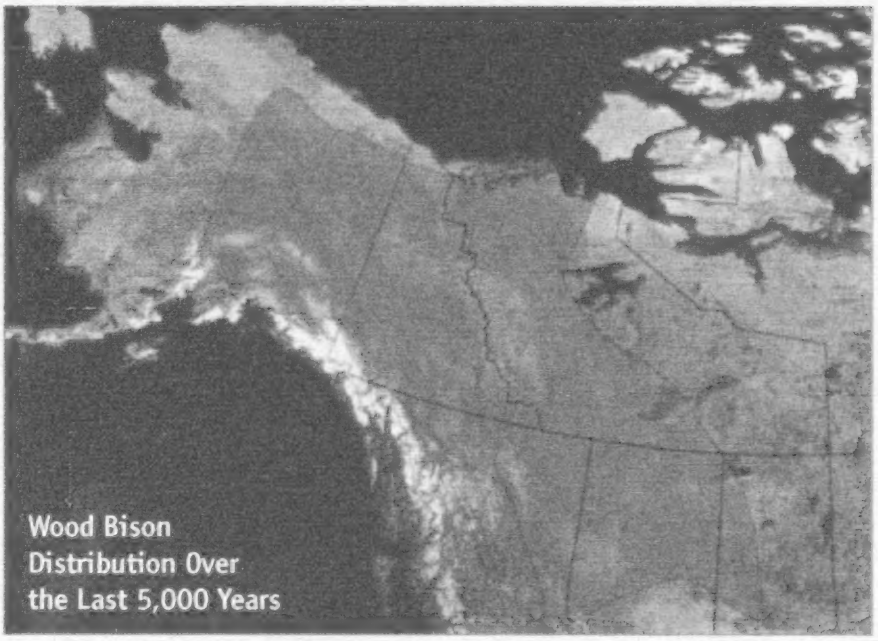


Figure 1: Approximate historic distribution of wood bison.

Wood bison were initially assessed as *endangered* by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) in 1978. COSEWIC down-listed wood bison to *threatened* in 1988 and confirmed that status in their 2000 reassessment. In 2004, wood bison were listed as *threatened* on Schedule I of the federal *Species at Risk Act*.

Critical habitat is a specific legal term defined by the federal *Species at Risk Act* as "the habitat that is necessary for the survival or recovery of a wildlife species listed as *threatened* or *endangered*." More information and research is needed to identify suitable and critical wood bison habitat in the NWT.

Environment Canada, in cooperation with responsible jurisdictions, is drafting a *Recovery Strategy for the Wood Bison in Canada* as required by the federal *Species at Risk Act*. The NWT is participating in the development of this strategy.

Actions taken on bison management since the draft *Wood Bison Management Strategy for the NWT* was released in January 2009 are:

- An increase in wood bison tags available for the Tłı̨chǫ region from three to 45 tags.
- An increase in wood bison tags available for the Nahanni population.
- Implementation of bison hunting along Highway 3.
- Information on reducing wildlife/vehicle collisions in other jurisdictions has been compiled.
- Increased ENR efforts to deter bison from communities.
- Workshops in communities towards developing this Strategy and management plans.

4 Populations in the NWT

There are seven free-ranging populations of wood bison within historic wood bison ranges in Canada (Figure 2). The largest is the Greater Wood Buffalo National Park population, which is made up of several intermixing subpopulations, including the Slave River Lowlands and Alberta's Wabasca and Wentzel populations.

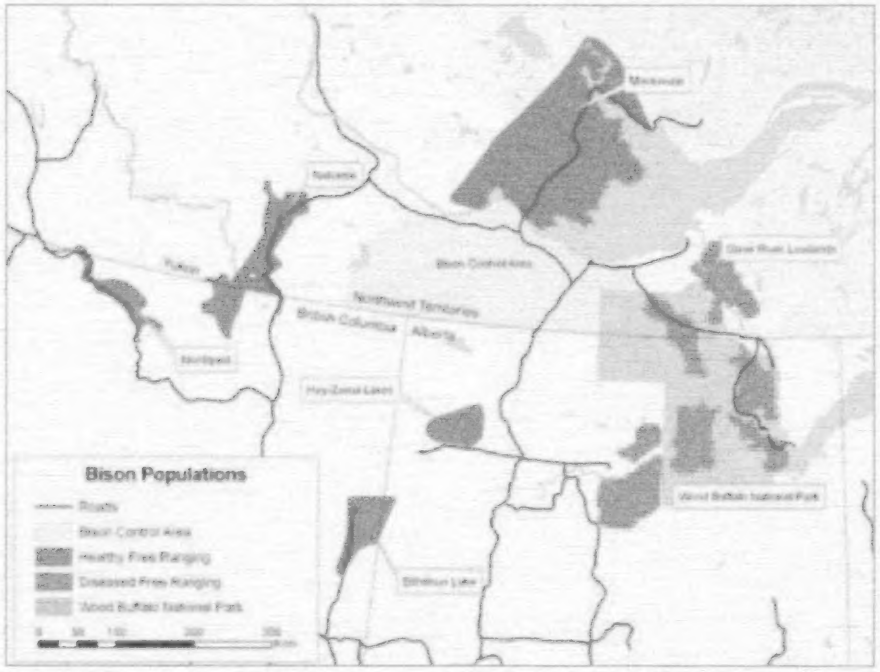


Figure 2: Wood bison populations in northwestern Canada. (The Aishihik population in western Yukon is not shown.)

In the NWT, wood bison are found in three areas:

Slave River Lowlands

Bison in the Slave River Lowlands (SRL) range on both sides of the Slave River, including into Wood Buffalo National Park (WBNP). Their range is bounded by the Precambrian Shield on the east. Since bison move between SRL and WBNP, SRL bison are considered to be part of the Greater WBNP wood bison population. Wood bison in the park are managed by Parks Canada. Animals outside the park in the NWT are managed by the GNWT. The SRL population is infected with bovine tuberculosis and brucellosis. In the early 1960s there were between 1,300 and 2,500 bison in the SRL. Numbers declined to 500 or less by the late 1980s and were estimated at approximately 500 animals in 2000. In 2009, there were an estimated 1,000 bison in the SRL. This suggests an increase in this population after a long period of decline, similar to the rest of the Greater WBNP population.

Photo Credit: Danny Allaire

Mackenzie

In 1963, 77 wood bison were captured from the Neecle Lake area of WBNP to establish a captive breeding herd. After testing for disease, 19 disease-free animals were held in corrals near Fort Smith. In June 1963, an anthrax outbreak occurred in free-ranging bison to the north of the holding facility and the captive herd was transferred to an area within the historic wood bison range west of Great Slave Lake. In August 1963, 18 bison were transported from the holding facility and released approximately 25 km north of Fort Providence. Two animals died soon after. The 16 survivors founded the Mackenzie bison population, which increased to 2,400 animals by 1989. This population declined to about 1,600 bison in March 2008, down approximately 20 percent from estimates obtained in 1998 and 2000 (Figure 3).

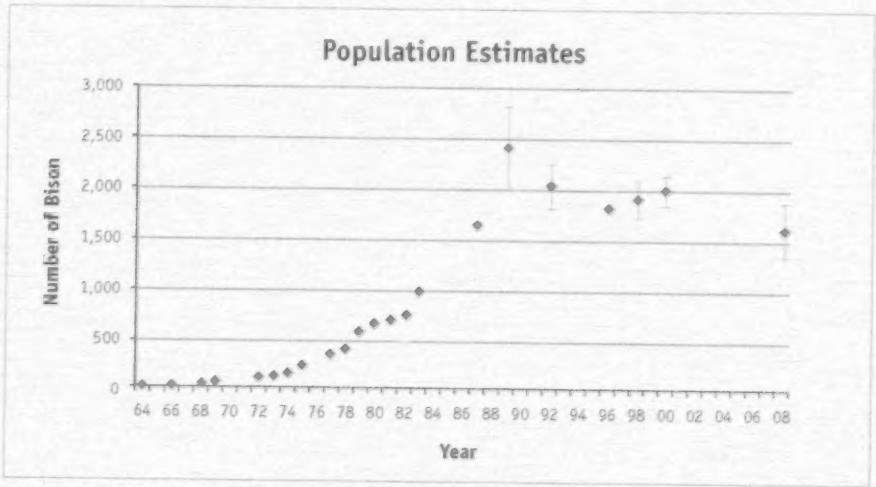


Figure 3: Mackenzie wood bison population size estimates, 1964 to 2008. Error bars are 95 percent Confidence Limits.

Nahanni

The Nahanni population was established in 1980 when 28 wood bison from Elk Island National Park (EINP) were released near Nahanni Butte. The founding herd fragmented. Some animals moved as far south as Fort Nelson, British Columbia, and some died. Within a year of release, only 14 bison remained in the Nahanni Butte area. By 1989, numbers had increased to about 40. Twelve wood bison from Moose Jaw Wild Animal Park, which also had their origins in EINP, were released near Nahanni Butte in 1989. In 1998, the population was further increased by the release of 59 more wood bison from EINP. In March 2004, the Nahanni population was estimated at about 400 animals, not including calves. Annual age and sex composition studies suggest the population is slowly increasing.

5 Challenges

5.1 Addressing Disease

Three diseases currently challenge wood bison management in Canada. They are bovine tuberculosis *(Mycobacterium bovis)*, bovine brucellosis *(Brucella abortis)* and anthrax *(Bacillus anthracis)*. Tuberculosis, brucellosis and anthrax are all cattle diseases that can infect wildlife, other livestock and humans.

5.1.1 Bovine Tuberculosis and Bovine Brucellosis

Bovine tuberculosis and bovine brucellosis are common in the greater WBNP bison population, including the SRL. The Mackenzie and Nahanni bison populations are believed to be free of those diseases.

Tuberculosis and brucellosis are chronic infections that reduce reproduction and survival in bison. While either disease may cause the death of individuals, the more important effects may be on immune function, energy balance or reduced reproduction, which can lower bison population growth rates. Tuberculosis and brucellosis combined with predation, human harvest or other significant mortality factor, such as major drowning events or anthrax outbreaks, can cause bison populations to decline.

Bison in WBNP were infected with tuberculosis when more than 6,600 plains bison were moved from Wainwright, Alberta, to WBNP in the 1920s. The origin of brucellosis infection in WBNP is not clear, but the most likely source was the animals from Wainwright. It is believed bovine tuberculosis and brucellosis in the Wainwright bison originally came from infected cattle. Both tuberculosis and brucellosis can be spread among wildlife populations and back to domestic livestock and to humans.

The most recent estimate of infection rates in the greater WBNP wood bison population found about 50 percent of the animals were infected with bovine tuberculosis and 30 percent with bovine brucellosis. These infections reduce productivity and survival of bison and, in combination with feeding conditions, weather and predation, contributed to the long-term decline of the greater WBNP wood bison population from 1970 to 1999. However, the WBNP population has more than doubled since 1999, despite the presence of these factors.

The challenge to bison management is to minimize the risk of tuberculosis and brucellosis spreading from the WBNP area to infect healthy wood bison populations in NWT and Alberta.

The Bison Control Area (BCA, Figure 4) was established in 1987 as a joint program of ENR and Parks Canada to reduce risk of disease spreading to the Mackenzie population. The BCA is surveyed by air every year between late November and March to detect bison in the area. Any NWT resident can shoot bison in the BCA, but animals removed from the BCA must be reported to ENR and tested for brucellosis and tuberculosis.

To date, 14 bison have been removed from the BCA. Current annual cost to maintain the BCA is $100,000. The BCA will remain in place until disease in WBNP and SRL is eradicated. To prevent contact between infected bison near WBNP and the growing Hay-Zama bison population (Figure 2), Alberta has implemented a harvest Hay-Zama bison to reduce numbers and limit range expansion east toward WBNP.

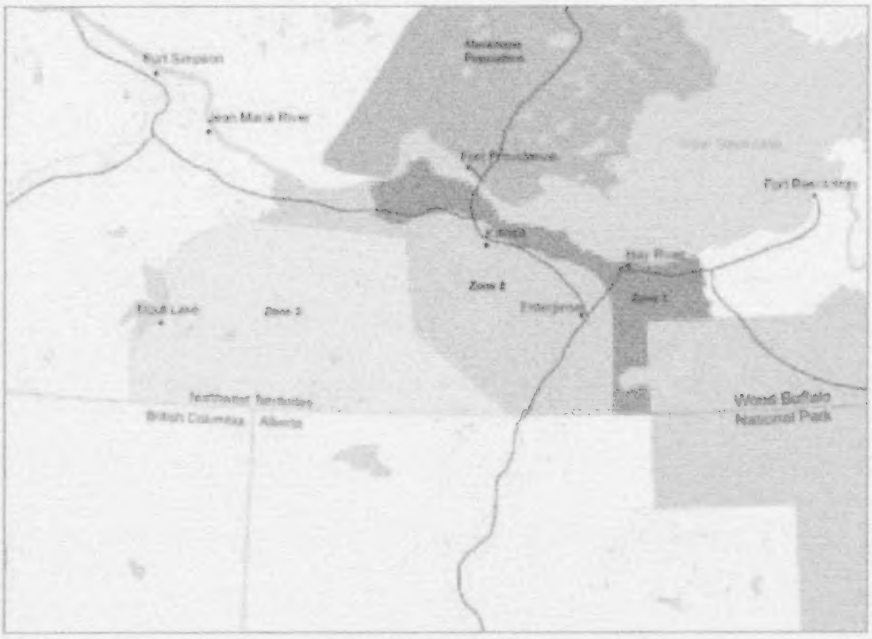


Figure 4: The Bison Control Area is divided into three zones. Surveillance is most frequent in zone 1.

The cattle industry in western Canada remains concerned about the potential for contact between diseased wild bison and cattle. Cases of tuberculosis or brucellosis for any captive animals must be reported to the Canadian Food Inspection Agency (CFIA). If a case is confirmed, the captive animals exposed to the diseases are slaughtered. This policy has resulted in the eradication of these diseases from cattle and the Canadian cattle industry is now recognized as disease-free. Any outbreaks of these diseases could cost Canada's multi-million dollar cattle industry the ability to export animals and animal products. This could lead to an economic crisis similar to the one following a confirmed case of bovine spongiform encephalopathy (BSE) in 2003. Eradicating tuberculosis and brucellosis from wild bison is a major challenge, which will require concerted effort by all partners over several years.

5.1.2 Anthrax

Anthrax spores can persist in the soil where bison encounter them while wallowing or feeding. Infections occur when large numbers of spores are inhaled or ingested. The anthrax bacterium multiplies rapidly in the blood, producing a poison that quickly kills the animal. Spores are released back into the environment when scavengers open the carcass and spread infected tissues.

Anthrax outbreaks in wood bison have occurred in the SRL, Mackenzie Bison Sanctuary and WBNP. None have been reported in the Nahanni population. In North America, anthrax rarely affects species other than cattle or bison, where severe outbreaks can kill many animals

in a short time. In the NWT, outbreaks of anthrax have occurred only in bison and, on rare occasions, moose and black bears have died from the disease. The most recent outbreaks in bison were in WBNP in 2007 and the SRL and Mackenzie Bison Sanctuary in 2010.

5.1.3 Other Diseases

Preventing the spread of diseases carried by domestic animals to wild bison is not currently an issue in the NWT. It is a real concern in Alberta and British Columbia where ranching and farming are extensive within wood bison ranges. Managing potential contact between domestic animals and wood bison will become important to wood bison managers as agriculture and wood bison ranges expand.

The challenge is to minimize the risk of tuberculosis and brucellosis spreading from the WBNP area to infect healthy wood bison populations in the NWT and Alberta. Additional challenges posed by anthrax are monitoring outbreaks, finding all infected carcasses, reducing the number or severity of future outbreaks and preventing transmission to humans.

5.2 Habitat Management

Currently, there is sufficient habitat in the NWT to support expanding bison populations. However, potential causes of bison habitat loss or degradation in the NWT include changes in water levels, oil and gas development, mining, the spread of shrubs and trees into prairie habitat, forest management practices and agriculture.

Development has caused major losses of historic bison habitat in Alberta and British Columbia. Former key grazing meadows in the Mackenzie bison range have flooded in recent years as water levels in the area have increased.

Land use activities can also lead to further developments such as access roads and other linear features. Bison, especially males, travel along these roads and linear features and can disperse invasive alien plant species when those are used to re-vegetate disturbed sites. Bison using development sites can cause increased bison/human conflict, such as damage to equipment or pipelines, increased bison deaths on roads and contact with agricultural operations. Roads and other linear features can also result in bison moving into areas where they would not otherwise exist.

Habitat quality and quantity are also affected by several factors. These include water levels and forest fire management practices. High water in the Mackenzie Bison Sanctuary has reduced the availability of grazing habitat for bison. Fire is a natural component of the boreal forest ecosystem and can maintain or increase forage availability by reducing woody vegetation. It can also be an important habitat management tool to reduce invasion of shrubs into prairies. The challenge is to work with communities to maintain fire in the ecosystem.

The challenges will be to monitor and assess the cumulative effects of habitat changes to maintain adequate habitat for wood bison and maintain habitat productivity.

5.3 Managing Bison Harvests

The devastating declines in wood and plains bison populations, resulting in their near extinction in the late 1800s, were caused by hunting and not loss of habitat. Today, harvesting is part of recovery management for wood bison. In the NWT, harvesting is used to provide benefits to residents and increase acceptance of bison. It is also used to manage risk of disease transmission between bison populations and to reduce bison/human conflicts, particularly in communities.

An ongoing challenge will be to determine harvest quotas for each population, allocate harvests and track mortality, while respecting Aboriginal rights.

Under the federal *Species at Risk Act*, a species listed as *threatened* may not be killed on federal Crown land that is under the authority of the federal Minister of the Environment, such as National Parks or National Wildlife Areas, except where permitted under a national recovery strategy. For this reason, bison hunting is not allowed in WBNP. Hunting for wood bison from the Nahanni and Mackenzie populations is allowed under a quota system, but regulations differ between the two populations. In the SRL, General Hunting Licence (GHL) holders may hunt bison without limit or closed season because the NWT *Big Game Hunting Regulations* consider these animals to be hybrid bison.

Harvesting is also used as a recovery management tool in the Yukon and Alberta. Management concerns in these jurisdictions include bison exceeding target population sizes and traffic safety. In Alberta, there is also concern the disease-free Hay-Zama population may come into contact with infected bison from the WBNP area.

5.4 Maximizing Social, Economic and Cultural Benefits

The challenge is to re-establish a connection between people and bison in all areas, while maximizing the social, economic and cultural benefits for everyone involved with the recovery of wood bison in the NWT.

Continued existence of wildlife depends on acceptance by local people. Social and cultural acceptance by local people and Aboriginal communities will be very important for recovery of wood bison because local residents use and manage landscapes where the species will need to live to achieve recovery.

Wildlife conservation projects will be more successful if they create social and economic benefits to people living in the local area. Benefits from wildlife can take various forms, but part of the social, cultural and, perhaps, spiritual connection to bison will be based on opportunities to hunt the animals. There may also be additional economic benefits through opportunities for tourism and outfitting. An expanding wood bison population offers increased opportunities for outfitted hunts. There is a quota for outfitted bison hunts only in the Mackenzie population.

5.5 Reducing Bison/Human Conflicts

Bison, like other wildlife, can come into conflict with humans. In the NWT, conflicts generally occur when bison enter communities or occupy highway corridors. In other areas, bison also create conflicts with agriculture.

Bison have been coming into Edzo, Behchokǫ̀, Nahanni Butte, Fort Liard and Fort Providence for years. Within communities, these animals can damage property, injure pets and be a hazard to human safety. There are programs in Fort Providence and Fort Liard to herd bison out of the communities. Herding only has a short-term effect and does not deter bison from returning. While some actions like community planning are underway, more information is needed to develop effective measures to keep bison out of communities.

Collisions between bison and vehicles occur on all NWT highways in bison ranges. In 2009, the first human fatality associated with bison on Highway 3 occurred. The probability of additional human fatalities may increase, especially along Highway 3, as the number of collisions has increased in recent years (Figure 5). This increase is likely due to increased speed and volume of traffic, the movement and expansion of Mackenzie bison due to

flooding in the Mackenzie Bison Sanctuary and the straightening, widening and increased maintenance of the highway.

The Department of Transportation (DOT) is also concerned about the number of bison and vehicle collisions along Highway 5 to Fort Smith. DOT is collaborating with Parks Canada to reduce collisions by raising public awareness.

Bison most frequently hit by vehicles are adult females, then calves, followed by adult males. Collisions are more frequent from August to December. Data suggest the majority of bison/vehicle collisions occur during darkness or low light conditions.

The challenge is for all people living and working within the range of wood bison to work together to reduce bison/human conflicts.

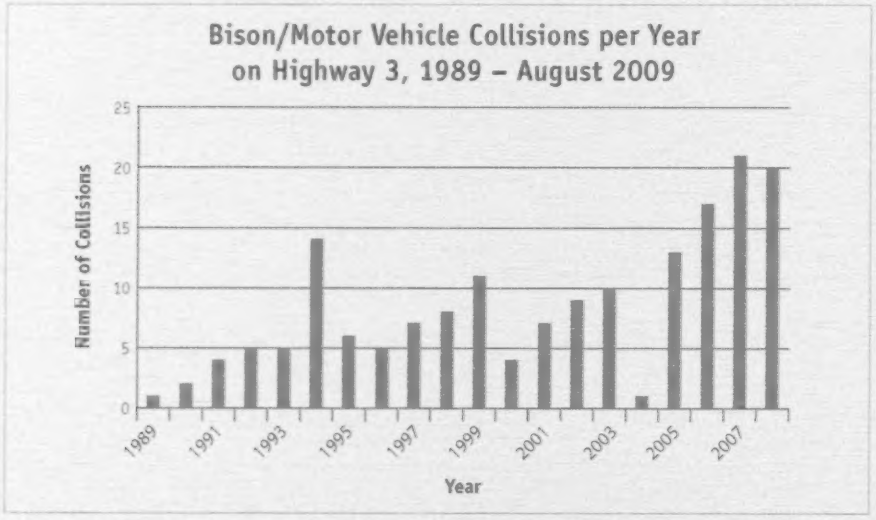


Figure 5: Collisions between bison and motor vehicles on Highway 3 have increased in recent years.

Collisions between bison and vehicles are expected to increase further once the Deh Cho Bridge is completed because traffic on Highway 3 will increase between midnight and 6:00 a.m., hours the ferry currently does not operate. The increase in traffic volume and night-time traffic may cause the number of collisions to increase significantly.

Cattle grate aprons have been included in the bridge design to help prevent bison from getting onto the bridge.

The *Drive Alive!* Program provides public messaging and campaigns to reduce the number of bison/vehicle collisions in the NWT. *Drive Alive!* is the travel safety information program of the GNWT. The key messages of the *Drive Alive!* Program for bison awareness are:

- Drive with care in bison country, at a speed appropriate for road conditions, and don't overdrive your headlights. You cannot avoid the bison you cannot see, particularly at night.
- All bison collisions are avoidable if drivers exercise caution and avoid distractions.
- The risk of bison collisions on Highway 3 are increasing each year as bison extend their range closer to Yellowknife.
- Those who hit a bison are at risk of serious injury or death. Wear your seat belt at all times and ensure everyone in your vehicle is doing the same.

The challenge for bison management is to understand the impact bison populations have on other species, particularly woodland caribou and moose.

5.6 Impacts of Bison on Ecosystems

Wood bison are the largest land mammals in North America and, especially when re-introduced into an area, have a noticeable impact on local ecosystems.

Bison affect habitats directly by grazing, trampling, defecating, urinating, making trails, wallowing, horning and rubbing on trees and other objects. There is little overlap in the diets of bison, moose and caribou, so it is unlikely there will be direct competition between these species. However, increasing bison populations can result in increased numbers of predators, which may affect boreal woodland caribou or moose populations.

The challenge is to increase genetic diversity in the Mackenzie and Nahanni populations, and any new populations.

5.7 Enhancing Genetic Diversity

WBNP and the SRL subpopulation have the most genetically diverse wood bison. The Mackenzie population was established from 16 individuals taken from WBNP and the EINP captive herd is descended from 11 founders, also from WBNP. As a result of the small number of animals used to establish them, the Mackenzie and EINP populations have lower levels of genetic diversity than WBNP.

The Nahanni, and all other wood bison populations except the Mackenzie, were established by taking animals from EINP's captive herd. They may have even lower genetic diversity than EINP.

Low levels of genetic diversity in a population can result in lower survival and reproductive success. It can also result in a reduced ability to adapt to changes in the environment, such as those resulting from climate change.

5.8 Preventing Hybridization

The challenge is to prevent domestic bison and plains bison from coming into wood bison range in the NWT.

There are three types of hybridization that challenge wood bison conservation across the species' range. These are hybridization with domestic bison, hybridization with cattle and hybridization with wild plains bison.

Domestic bison are selected for traits that are likely to be maladaptive in wild populations, particularly tractability and meat production (e.g. "less hump, more rump"). This makes it important to prevent hybridization between wild and domestic bison. Currently, this is a low risk because there are no domestic bison in the NWT.

A century ago, efforts were made to crossbreed plains bison with cattle in attempts to introduce desirable traits from bison into cattle. Some of the resulting hybrids were backcrossed to bison. After generations of these backcrosses, hybrids became indistinguishable from pure bison to the point where some were incorporated into bison herds. The legacy of this means a significant portion of today's plains bison conservation herds have some cattle ancestry. To conserve wild bison, it is important to prevent the spread of cattle DNA into bison populations where it does not already exist. Cattle DNA is most likely to spread via bison with cattle ancestry. To date, there have been no published reports of cattle DNA in the Mackenzie, WBNP or EINP wood bison populations.

Bison in the SRL, WBNP and all populations established from WBNP founders are wood bison genetically. They remain a subspecies distinct from plains bison despite the introduction of plains bison to WBNP in the 1920s, where they subsequently hybridized with wood bison. Since wood and plains bison are genetically distinct, they should be managed separately to prevent further hybridization. The threat of further hybridization is currently low in the NWT. However, there is a free-ranging, feral plains bison population within the original wood bison range at Pink Mountain, British Columbia. The GNWT will work with its partners to prevent contact between these plains bison and the Nahanni and other wood bison populations.

5.9 Agriculture

The challenge will be to manage agriculture and bison recovery actions together so they do not have negative impacts on each other.

Agriculture presents a number of challenges to wood bison recovery. Changing natural ecosystems into farmland reduces wildlife habitat. Domestic animals can spread diseases such as tuberculosis and brucellosis to bison. Crop or property damage caused by bison reduces local acceptance of wildlife and problem animals may be killed. Agriculture currently is not a major activity in the NWT.

6 Key Strategies

Photo Credit: Susan Fleck

The *NWT Wood Bison Management Strategy* has four major components to achieve its goals and address challenges. These are:

1. Work with communities and Aboriginal governments to develop and implement separate management plans for Mackenzie, Nahanni and Slave River Lowland bison populations.
2. Promote social, economic and cultural benefits for NWT residents.
3. Maintain healthy, genetically diverse and productive wood bison populations.
4. Support wood bison recovery throughout its historic range.

Key strategies and immediate actions are identified in each component. The actions needed to implement and achieve the goals of this Strategy are outlined in Appendix B.

6.1 Work with communities and Aboriginal governments to develop management plans for each bison population.

The challenges to recovery are different for each wood bison population in the NWT. Communities should take the lead in identifying management priorities for wood bison populations in their area to make sure recovery actions are appropriate and acceptable to community members. This can be achieved by working with communities and Aboriginal governments to prepare individual management plans for each of the three wood bison populations. Development of these plans will also involve identifying ways to provide effective legal protection for this species in the NWT as required under the federal *Species at Risk Act*. It will take about two years to complete these plans and begin implementation. Collecting the information needed to manage wood bison populations will continue.

Key Strategies

1. Develop a ten-year management plan for each of the three wood bison populations, Mackenzie Nahanni and Slave River Lowlands, by 2012.
2. Implement management plans for each population.

6.2 Promote social, economic and cultural benefits for NWT residents.

To be successful, recovery and conservation actions must be supported by local community residents. The likelihood of community support is far greater if species conservation leads to social, economic or cultural benefits to the community.

Wood bison already provide a number of community benefits. Subsistence use of wood bison helps reduce dependence on store bought foods and encourages a healthy diet. Expanding opportunities to harvest bison could help offset the reduction in available meat from decreasing barren-ground caribou populations.

Bison can also contribute to economic diversification and self-sufficiency. Management plans will identify commercial opportunities. In addition, wood bison are an important tourist attraction. Opportunities to increase the potential economic benefits should be explored.

However, bison are also causing economic losses and jeopardizing human safety by coming into conflict with people in communities and on highways. These issues need to be addressed if community residents are to support bison recovery actions.

Photo Credit: Troy Ellsworth

Key Strategies

3. Expand opportunities to harvest wood bison.
4. Expand potential economic benefits.
5. Work with communities and other agencies to reduce bison/human conflicts.

6.3 Maintain healthy and productive wood bison populations.

Anthrax, bovine tuberculosis and brucellosis directly affect the survival and productivity of wood bison populations and slow population recovery. These diseases also present serious health risks to humans, other wildlife and livestock. Risk to humans can be reduced through increased public awareness of proper techniques to prevent infection. Tackling these diseases will require commitments from communities and other agencies.

Eliminating tuberculosis and brucellosis from our northern landscape is a long-term goal of this Strategy. Once this goal is achieved, wood bison recovery would no longer be limited by these diseases, disease monitoring costs could be greatly reduced, the BCA program would no longer be necessary and people would have healthy bison to harvest in the SRL. A goal of the NWT Anthrax Emergency Response Plan is to reduce the frequency and severity of anthrax outbreaks. Preventing habitat loss or degradation is also a critical part of maintaining productive bison populations.

Key Strategies

6. Monitor disease levels in all populations.
7. Engage partners to manage diseases.
8. Protect and manage bison habitat.

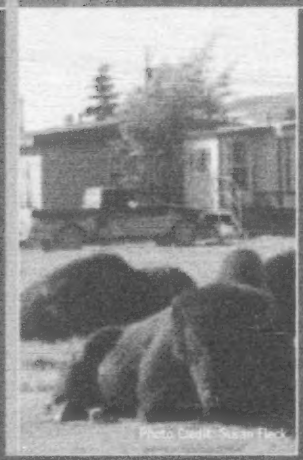
6.4 Support wood bison recovery throughout its historic range.

The historic range of the three wood bison populations in the NWT covers significantly more area than the current ranges. Continued recovery of wood bison throughout their historic range will contribute to removing wood bison from the federal species at risk list. This would be a great legacy for the government and people of the NWT. However, expanding wood bison throughout their historic range will require support and cooperation of Aboriginal organizations, the Tłı̨chǫ Government and NWT communities.

Key Strategies

9. Consult with communities, wildlife management boards and Aboriginal organizations regarding the recovery of wood bison throughout their remaining historic range in the NWT.

Appendix A – Financial Summary



	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015
Work with communities to develop management plans.					
Strategy 1	$ 130,000	$ 125,000	0	0	0
Strategy 2	To be determined in management plans				
Promote social and economic benefits.					
Strategy 3	No major costs				
Strategy 4	No major costs				
Strategy 5	$ 70,000	$ 70,000	$ 70,000	$ 70,000	$ 70,000
Maintain healthy wood bison populations.					
Strategy 6	$ 60,000	$ 60,000	$ 60,000	$ 35,000	$ 35,000
Strategy 7	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000
Strategy 8	$ 5,000	$ 10,000			
Support national wood bison recovery.					
Strategy 9	$50,000	0	$ 5,000	0	0
Totals	**$ 565,000**	**$ 515,000**	**$ 385,000**	**$ 355,000**	**$ 355,000**
Existing Resources	$ 95,000	$ 95,000	$ 70,000	$ 70,000	$ 70,000
Partnership Resources	$ 175,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000
New Resources	**$ 295,000**	**$ 270,000**	**$ 165,000**	**$ 135,000**	**$ 135,000**

The Strategy will be reviewed in five years and funding requirements for 2015-2020 will be identified at that time.

Appendix B – Detailed Strategies

1. Develop a ten-year management plan for each of the three wood bison populations: Mackenzie, Nahanni and Slave River Lowlands.

- Consult with communities, resource management boards, the Tłı̨chǫ Government and other stakeholders to identify conservation objectives, threats, challenges and management actions to develop a ten-year management plan for each of the three wood bison populations: Mackenzie, Nahanni and Slave River Lowlands.
- Establish committees and hold workshops with communities and stakeholders to develop management plans ($60,000, Timeline to 2011).
- Collect or update information required for management.
  - Update Nahanni (2010-2011) and SRL (2009-2010) population estimates ($40,000).
  - Conduct annual composition surveys for all populations ($25,000).
  - Identify methods to monitor moose, caribou and predator populations on bison ranges (costs to be determined).
- Consult on options to enhance genetic diversity of introduced NWT wood bison populations without spreading tuberculosis or brucellosis (no major cost).
- Determine levels of genetic diversity in the Nahanni and Mackenzie populations ($5,000).

	2010-2011	2011-2012
Hold consultations	$ 60,000 (new)	$ 60,000 (new)
Population estimates	$ 40,000 (new)	$ 40,000 (new)
Composition surveys	$ 25,000 (ongoing)	$ 25,000 (ongoing)
Determine levels of genetic diversity	$ 5,000 (new)	
TOTAL	**$ 130,000**	**$ 125,000**

Timeline: Winter 2012

Payback and Results

- Ten-year management plans to address specific objectives and challenges for each population are developed.
- Communities and Aboriginal governments provide direction on management actions on traditional lands.
- Public and stakeholders are aware of their role in conserving bison.

2. Implement management plans for each of the three populations.

	2011-2012 and ongoing
Mackenzie	Investment to be identified in management plans
Nahanni	
Slave River Lowlands	
TOTAL	

Timeline: Begin spring 2012

Payback and Results

- Social, cultural and spiritual, and economic connections between people and bison are re-established.
- Actions are taken to help the recovery of wood bison and to address specific challenges to recovery.

3. Expand opportunities to harvest wood bison.

- Identify targets for population size.
- Determine sustainable harvest levels.
- Create new bison management zones.
- Revise harvest quotas and hunting seasons.
- Track all bison mortality (e.g. hunting, disease sampling, traffic).

(No major costs.)

Timeline: Ongoing

Payback and Results

- Bison harvest is sustainable for present and future generations.
- Community residents have greater access to a source of meat.

4. Expand potential economic benefits that could result from increased bison populations.

- Enable outfitting opportunities for communities to maximize benefits to NWT residents (no major cost).
- Promote viewing opportunities for tourists (cost to be determined with Industry, Tourism and Investment).
- Consider small commercial harvest for local, NWT value-added markets (no major cost).
- Investigate other economic opportunities (Industry, Tourism and Investment – no major cost).
- Review concept of establishing domestic bison herds from wild stock (no major cost).

Photo Credit: Susan Black

Timeline: Winter 2012

Payback and Results

- Local economies are diversified.
- Attractions for tourists are increased.

5. Work with communities and other agencies to reduce bison/human conflicts.

- Continue immediate actions to herd bison out of communities and remove problem animals ($25,000).
- Work with communities and Municipal and Community Affairs (MACA) to implement actions to reduce the number and frequency of bison within communities (cost to be determined with MACA).
- Work with communities and DOT to reduce conflicts with bison on highways, airports and bridges ($10,000).
- Work with other agencies and develop programs to modify drivers' behaviour to reduce frequency of bison/vehicle collisions on NWT highways ($15,000).
- Include bison habitat management objectives in land use plans (no major costs).
- Identify measures to reduce bison conflicts in agricultural areas as bison ranges expand (no major costs).
- Develop public education material to reduce conflicts between bison and people in communities ($20,000).

	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015
Continue immediate actions	$ 35,000 (ongoing)	$ 35,000 (ongoing)	$ 35,000 (ongoing)	$ 35,000 (ongoing)	$ 35,000 (ongoing)
Public education	$ 35,000 (new)	$ 35,000 (new)	$ 35,000 (new)	$ 35,000 (new)	$ 35,000 (new)
TOTAL	**$ 70,000**	**$ 70,000**	**$ 70,000**	**$ 70,000**	**$ 70,000**

Timeline: Ongoing

Payback and Results

- Public safety is improved.
- Cost to repair damage caused by bison is reduced.
- Reduced cost to government to address conflicts.

6. Monitor disease levels in all populations.

- For bovine tuberculosis and brucellosis:
  - Continue testing for disease in Mackenzie and Nahanni populations. Focus sampling in areas of highest risk ($25,000 – three years).
  - Continue disease sampling from all harvested bison from the Mackenzie and Nahanni populations ($5,000).
- For anthrax:
  - Continue anthrax surveillance program on Mackenzie and SRL ($25,000).
  - If dead bison are found, implement the Anthrax Emergency Response Plan (new funding is requested on emergency basis).
  - Keep current with literature and research to determine if current anthrax response strategy to reducing spore formation and soil contamination can be improved (no major cost).
  - Keep current with literature and research to determine if there are new methods of detecting carcasses during anthrax outbreaks (no major cost).
- Provide public education material on disease ($5,000).

	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015
Enhanced disease monitoring program	$25,000 (new)	$25,000 (new)	$25,000 (new)	0	0
Ongoing monitoring program (disease sampling from harvested bison)	$ 5,000 (ongoing)	$ 5,000 (ongoing)	$ 5,000 (ongoing)	$ 5,000 (ongoing)	$ 5,000 (ongoing)
Annual anthrax testing	$ 25,000 (ongoing)	$ 25,000 (ongoing)	$ 25,000 (ongoing)	$ 25,000 (ongoing)	$ 25,000 (ongoing)
Provide public education materials	$ 5,000 (ongoing)	$ 5,000 (ongoing)	$ 5,000 (ongoing)	$ 5,000 (ongoing)	$ 5,000 (ongoing)
TOTAL	**$ 60,000**	**$ 60,000**	**$ 60,000**	**$ 35,000**	**$ 35,000**

Timeline: Ongoing

Payback and Results

- Anthrax outbreaks and human risk are minimized.
- Disease-free status of Mackenzie and Nahanni populations is maintained.
- Public is informed on how to minimize health risks.

7. Engage partners to manage diseases.

- Continue efforts to prevent the spread of bovine tuberculosis and bovine brucellosis from bison in and around WBNP by maintaining the BCA as an effective bison-free zone ($100,000 cost shared with Parks Canada Agency).
- Establish a joint committee with Parks Canada, Alberta and NWT communities to develop a joint plan to address tuberculosis and brucellosis eradication ($150,000).
- Where farming or ranching occurs, identify measures to prevent wildlife from being infected with new diseases or parasites from livestock (no major cost).

	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015
Maintain Bison Control Area	$ 50,000 (new) $ 50,000 (Parks Canada)	$ 50,000 (new) $ 50,000 (Parks Canada)	$ 50,000 (new) $ 50,000 (Parks Canada)	$ 50,000 (new) $ 50,000 (Parks Canada)	$ 50,000 (new) $ 50,000 (Parks Canada)
Joint Plan	$ 50,000 (new) $ 100,000 (partnership funds)	$ 50,000 (new) $ 100,000 (partnership funds)	$ 50,000 (new) $ 100,000 (partnership funds)	$ 50,000 (new) $ 100,000 (partnership funds)	$ 50,000 (new) $ 100,000 (partnership funds)
TOTAL	**$ 250,000**	**$ 250,000**	**$ 250,000**	**$ 250,000**	**$ 250,000**

Timeline: Winter 2013

Payback and Results

- Action plan developed to eliminate bovine tuberculosis and brucellosis, including estimated cost of implementation.

8. Protect and manage bison habitat.

- Where critical habitat is identified under the national recovery strategy, assess need for protection and associated management options (no major cost).
- Conduct a preliminary study of cumulative effects on bison habitat ($10,000).
- Promote natural fire regime to maintain prairies (no major cost).
- Study water level changes on historic range ($5,000).
- Assess impact of new land use applications (e.g. agriculture, oil and gas operations) on bison habitat and bison health (no major cost).

Photo Credit: GNWT

Photo Credit: GNWT

	2010-2011	2011-2012
Cumulative effects study		$ 10,000 (new)
Study water levels on historic range	$ 5,000 (new)	
TOTAL	**$ 5,000**	**$ 10,000**

Timeline: Winter 2013

Payback and Results

- Critical habitat is protected to ensure bison recovery.
- Impact of land use activity on bison recovery is minimized.

9. Support and expand wood bison recovery efforts in the NWT.

- Support completion and implementation of the national draft Recovery Strategy for the Wood Bison in Canada in cooperation with partners ($10,000).
- Identify critical habitat for all bison populations (no major costs).
- Assist Canada to undertake consultation on the draft national recovery strategy ($40,000).
- Work with communities and co-management boards to identify opportunities to support expansion of wood bison throughout historic range in the NWT ($5,000).

	2010-2011	2011-2012	2012-2013	2013-2014
Complete national recovery strategy	$25,000 (new)	$25,000 (new)	$25,000 (new)	0
Consultations on national recovery strategy in the NWT	$ 5,000 (ongoing)	$ 5,000 (ongoing)	$ 5,000 (ongoing)	$ 5,000 (ongoing)
Consult on recovery activities in the NWT	$ 25,000 (ongoing)	$ 25,000 (ongoing)	$ 25,000 (ongoing)	$ 25,000 (ongoing)
TOTAL	**$ 60,000**	**$ 60,000**	**$ 60,000**	**$ 35,000**

Timeline: Begin winter 2012

Payback and Results

- Wood bison are recovered and benefits to NWT residents are maximized.

Resources

An investment of $2,175,000 is required to implement this Strategy. Additional resources will be requested to implement management plans developed for each bison population.